

## Session 9: Linked Repositories – Theme of the Day

*Moderator: Jaime Goldman*

### **Digitization of Malawi's Aquaculture and Fisheries Grey Literature For Sustainable Information Management**

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#### **Abstract**

Lilongwe University of Library and Natural Resources (LUANAR) Library has a special collection of publications on Malawi or by Malawians. The collection is popularly known as "Malawiana." Malawiana are rare publications in the sense that they may not be available anywhere else and are sought after by library users. They are stored in a special area on shelves or in pamphlet boxes and are used only in the library in an enclosed area as they are vulnerable to theft or damage. Amongst the publications are ones on aquaculture and fisheries science information; most are in pamphlet boxes and only accessible in the LUANAR. The library embarked on a project to scan these Malawiana publications. The goal was to scan about 300 aquaculture and fisheries grey literature documents within one year and make them available first on the intranet before they were accessible online through platforms such as Aquatic Commons (AC) and African Digital Library Support Network (DLSN). The project used DSpace open source software to create a digital library collection. The project, which received initial funding from IAMSILIC, has assisted in exposing the rare publications to wider usage apart from preserving and conserving them. The paper describes the project's benefits, challenges and way forward.

**Keywords:** Digitization, digital repository, Malawiana, aquaculture and fisheries information, Aquatic Commons.

#### **Introduction**

A great deal of the knowledge generated in fisheries and aquaculture science and management in Malawi is not discoverable or accessible to researchers and fisheries managers at the national and local levels. Some local scientists have had some of their works made available in various publications both local and international; however, a larger percentage of the documents cannot be accessed online. Similarly, some local institutional libraries have attempted to create

digital and institutional repositories for locally generated documents, but a lot of work has yet to be done to identify, organize, prioritize, obtain, select, process and make available documents and materials that are relevant to fisheries management in Malawi. Similarly, there is a need to foster increased exchange of ideas and knowledge among managers, researchers and stakeholders.

### **Document Scanning**

Most of the locally generated documents are in print format. Work to digitize them has started and so far about 350 documents on aquaculture and fisheries science have been scanned using an ordinary office scanner (HP Scanjet N6350). The work is ongoing, though progressing slowly.

### **Creating a Digital Repository: Benefits**

The creation of a digital repository has had a number of benefits for LUANAR in particular and Malawi in general; some of them are as follows:

- **Exposure of local scientific materials**

There are a lot of documents in aquaculture and fisheries science available in various institutions in Malawi. Most of them are not accessible by users because they are not known since they either hidden in pamphlet boxes or cartons, while others are yet to find their way into the library. The creation of the digital repository would expose these documents to a wider readership.



*Figure 1. Some of the aquaculture and fisheries documents*

- **Preservation and conservation of rare scientific materials**

Many of Malawi's aquaculture and fisheries publications are in poor condition and also too fragile for frequent use. Maintaining and disseminating digital copies of these works in a repository would prevent the wear and tear on the original documents.

- **Enhancing the research process**

The repository allows research to move faster and more efficiently. Scientists are now spending less time seeking articles that they could not access through other sources. Through the repository they can do so with a few clicks of the mouse. This has speeded up not only the research process itself, but also the peer review process, especially when reviewers look up the supporting articles cited in the paper, and other research-related activities such as reviewing related literature for a new project.

- **Visibility and usage of research outputs**

The repository has maximized visibility of research outputs at LUNAR and the country as a whole and has increased their chances of usage. Articles that are in repositories are now discoverable through Intranet and Web search using appropriate keywords with one click. Data on repository usage have demonstrated increased levels of interest in research in the subject area.

## Achievements

The project has so far managed to scan about 350 documents, developed an institutional repository and with assistance from FAO has contributed a few documents to Aquatic Commons. Some documents have also found their way into the Malawi National Digital Repository. The project has helped in building skills for some LUNAR staff through the process of scanning documents, creating a repository and updating. Staff members have gained expertise in how to scan documents, creating a repository using DSpace software and maintaining the repository.

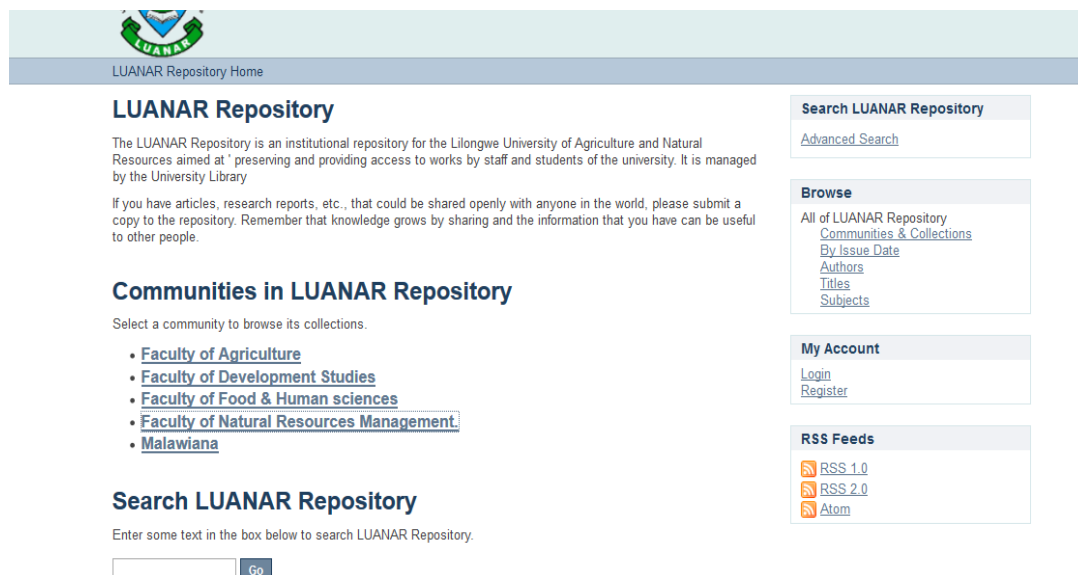


Figure 2. A Page From the LUNAR Repository.

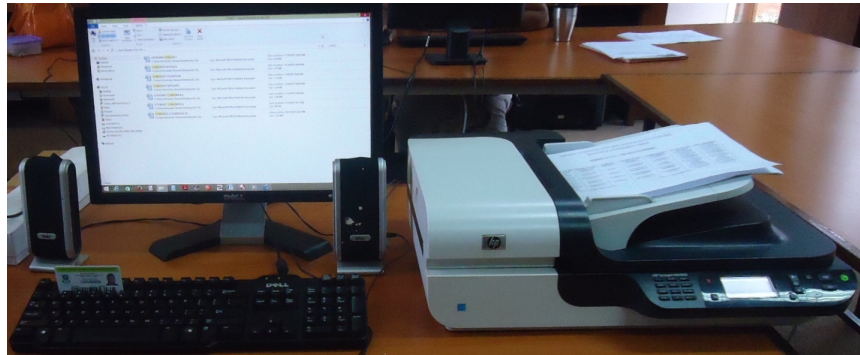
## Challenges

- **Neither LUANAR nor the country has a policy on Open Access**

LUANAR is yet to develop an Open Access policy upon which a digital repository could be widely accessible online. LUANAR has an institutional repository accessible on its intranet, although plans are to go online once a policy is developed. Malawi as a country has yet to develop an Open Access policy.

- **Most of the publications are in print format**

As already stated above, most of the documents in aquaculture and fisheries science need to be scanned and cleaned. The work is tedious and slow when using inappropriate equipment. An HP Scanjet 5590 flat bed, A4 size scanner is being used for the digitization process. Digitization of certain documents requires a heavy-duty scanner to hasten the process. They also need to go through an Optical Character Recognition (OCR) process after scanning because some of the documents are old.



*Figure 3. An HP Scanjet 5590 Flat Bed.*

Fortunately, the Library has now acquired a heavy-duty scanner (M1000 Book Scanner A3 300ppi) as shown below.



*Figure 4. Heavy-duty Scanner.*

The documents are provided by the scientists through visits LUANAR staff make to their institutions and offices. The scientists are now able to provide documents in either printed or electronic copies. Electronic copies are a better way of collecting the publications because it avoids the work of scanning or physically visiting the scientists since they could be sent via online.

- **Institutional repository activities not coordinated**

Some institutions have attempted to collect and scan documents for repositories in various subject areas. Notable amongst the institutions are Malawi National Library Services, Chancellor College, Mzuzu University and College of Medicine. These efforts are not coordinated, resulting in duplication.

### **Other Complementary Repositories' Activities in Malawi**

Some institutions such as PACT through its FISH (Fisheries Integration of Society & Habitats) project and the Malawi National Library Services (MNLS) have attempted to create institutional and digital repositories including unpublished articles on Malawi's fisheries and aquaculture. The Malawi Library and Information Consortium (MALICO) is leading in the development of Open Access policies for Malawi.

- **FISH Project**

The primary objective of the FISH project is *increased resiliency to climate change and improved biodiversity conservation through sustainable fisheries co-management* and it is funded by USAID. One of the project's outputs is *utilization of science, analysis, and information for decision-making increased*. Through this the project seeks to improve access to fish science & information. It therefore endeavors to facilitate a community of practice in Malawi for fisheries co-management, including both historical and current literature and data. It also aims to glean knowledge from fishers, extension agencies and stakeholders involved in the value chain from net to table. Improving access to relevant knowledge for fisheries management includes but is not limited to scientific information in published journal articles, unpublished technical reports ("grey literature"), data and statistics from research and monitoring efforts, oral and recorded narratives of past and present fishing activity and environmental conditions, social and economic information about the communities and areas where fishing occurs or whose activities impact on fish stocks and ecosystem productivity.

LUANAR has been part of this project. Its involvement is in the creation of a repository, sourcing relevant documents, scanning documents (where necessary), updating the repository and marketing it to researchers / scientists.

- **MALICO (Malawi Library Information Consortium) initiative**

- Development of Open Access Policies

Malawi does not have any policy or legislation on Open Access to encourage or oblige the government or its institutions to grant Open Access to research information. MALICO, with funding from EIFL (Electronic Information for Libraries), is leading a process of developing an Open Access policies for funders and institutions such as universities that would enhance access to research funded by government and donor agencies and to improve the dissemination of research results. The policies particularly seek to enhance scholarly communication, increase

the visibility of the scholarly output from Malawian researchers and institutions, and promote the development of the local publishing industry.

The key goal of developing the Open Access policies in Malawi is to advance research and knowledge sharing through the removal of technical, legal and financial barriers that researchers encounter in accessing each other's research work. Institutional and digital repositories therefore operate under such policies. So far Open Access policies have been drafted and are waiting to be approved by relevant authorities.

- Malawi National Digital Repository

The Malawi National Library Service created the [Malawi National Digital Repository](#) (MNDR) with documents collected from local institutions. MNDR is an Open Access e-repository platform where Malawian research and other relevant work reaches many and has a direct impact on policies and practices in Malawi, Africa and worldwide. There are 1,323 documents, of which about 50 are on fisheries and aquaculture science. It is expected that the two institutions will continue working together to avoid duplication of documents in their repositories.

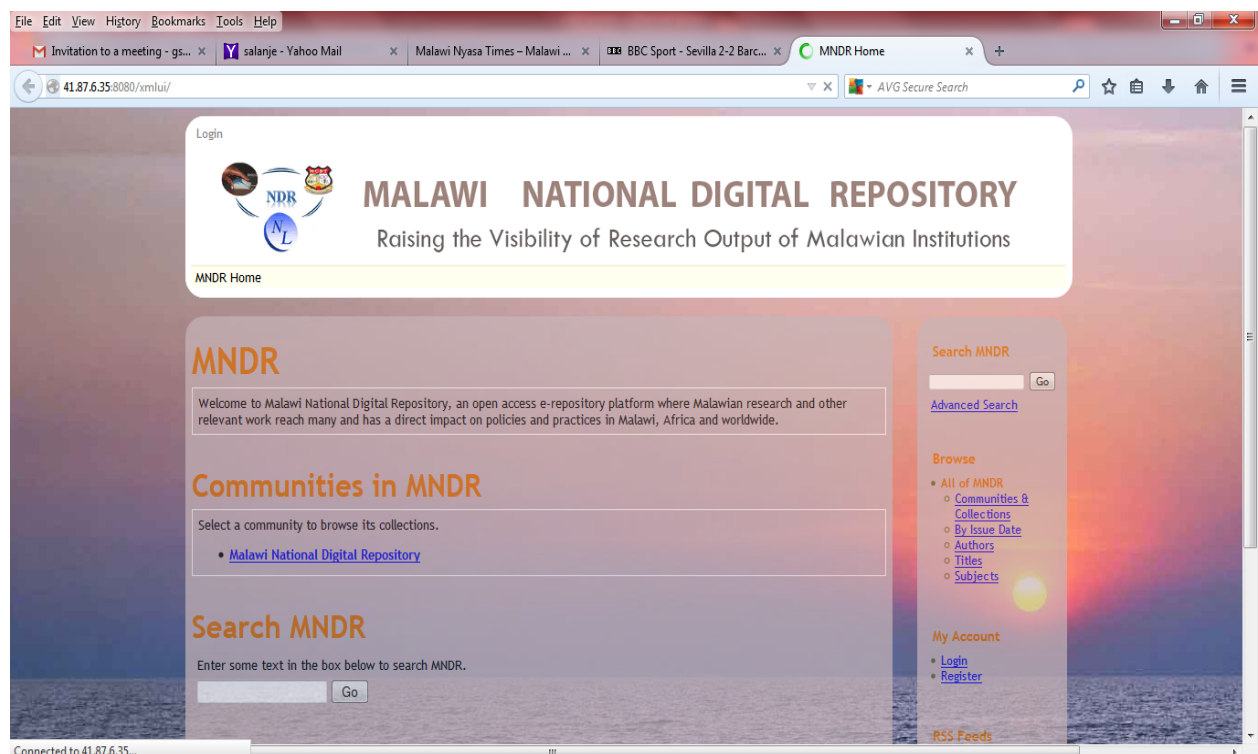


Figure 5. A Page View of the Malawi National Digital Repository.

### Future Activities on the Repositories in Malawi

- **Development of enabling policies**

As already indicated, most institutions in Malawi such as LUANAR and country as a whole have no Open Access information policy. However, the Malawi Library Information Consortium (MALICO) with funding from EIFL (Electronic Information for Libraries) has embarked on a project to develop open access policies for funders and institutions. The key goal of developing the Open Access policies for Malawi is to advance research and knowledge sharing through the removal of barriers that researchers encounter in accessing each other's research work. LUANAR as an institution of higher learning will also develop its own policy.

- **Collect all the fisheries documents (both printed and electronic) available in all institutions and in scientists' offices.**

There has been an effort to collect all the documents that are available in all fisheries scientific institutions in Malawi; this work will have to continue. Targeted institutions are: LUANAR, Fisheries Research, Fisheries Research Unit Library in Monkey Bay, World Fish Center, Chancellor College Department of Biology, Malawi Fisheries College in Mangochi, National Aquaculture Centre in Domasi, Department of Fisheries Headquarters in Lilongwe and Mzuzu University's department of Fisheries. There will also be a coordinated effort to share electronic documents or make links to existing repositories created by local institutions. The documents collected will have to find their way into Aquatic Commons if and when permission is given by the relevant institutions or the authors. This will indeed enhance the number of documents in AC from Malawi.

- **To encourage scientists/ researchers to deposit their papers with the library**

The first step is for scientists or researchers to be made aware of Open Access and its benefits, then encourage them to always deposit their papers with the library to be part of the repository. LUANAR Library will ensure that repository standards and completeness are upheld.

- **Continuous updating and marketing of the repository**

The repository will continuously be updated with more documents. As more documents are created and collected, there is a good possibility of updating the repository. However, some documents on Malawi aquaculture and fisheries are available in other digital repositories and accessible online. Before depositing any document on the local repository, it must first be established that the document is not already in another repository to avoid duplication or any violation of intellectual property rights (IPR). Links to other sources could be made on the local repository.

- **Contribute documents to Aquatic Commons**

LUANAR will continue to contribute local documents to Aquatic Commons. The issuing agency was Bunda College of Agriculture; now with a change of name, it is also necessary to change the issuing agency to LUANAR.

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